

## 1.2 Purpose

*Greening Federal Facilities* is a resource guide for Federal facility managers and designers to assist them in reducing energy consumption and costs, improving the working environment of those facilities, and reducing the environmental impacts of their operations. Showcase initiatives such as *The Greening of the White House* serve as models for initiating environmental and energy upgrades for Federal facilities.

**Sustainability** is a term that covers the wide range of actions needed to reduce the impact of the built environment on the natural environment and, with respect to this guide, is synonymous with “greening.” At its heart, sustainability is about leaving a high quality of life for future generations. For our society to be sustainable, we must (1) use all resources (energy, water, material, and land) efficiently and minimize waste; (2) protect the natural environment, the source of all our resources; and (3) create a healthy built environment for future generations. This guide concentrates on sustainable building and facility actions that are practical and cost-effective.

**This guide was developed by the U.S. Department of Energy (DOE) Federal Energy Management Program (FEMP)** and places key energy and environmental information, along with appropriate economic data, at the fingertips of facility managers and designers to assist in their decision-making. The guide provides a quick introduction to the many technologies and practices involved in greening efforts. It suggests actions that are likely to be successful as first steps in saving energy, water, and resources. Each section is condensed and identifies additional resources to consult for detailed information. *Greening Federal Facilities* emphasizes preventing waste and pollution instead of focusing on the compliance process.

Federal facility managers should be aware that Section 504 of Executive Order 13123 requires the Department of Defense (DOD) and the General Services Administration (GSA) to issue sustainable design and development principles for new construction. These principles and guidance are available and being embedded in the *Whole Building Design Guide* Web site.

## Issues

**So who are these facility managers and why are they important?** Facility managers are the people who manage several hundred thousand facilities worldwide on behalf of the United States. They can be in-house energy managers, solid waste managers, or others with similar responsibilities. In the DOD, they are the Base Civil Engineers (BCE) and Directors of Engineering and Housing (DEH). They are middle-level managers with huge responsibilities and declining human and financial resources. Some facility manager facts for consideration:



### DID YOU KNOW?

The cost of operating an average Federal building, including the amortized construction cost, is about \$15 per square foot (\$160/m<sup>2</sup>) per year. The cost of the Federal government employees in these buildings is on the order of \$315 per square foot (\$3,390/m<sup>2</sup>) per year. The meaning of this factor of 20 difference between building and occupant costs is clear. If you increase the productivity of the work force by a mere 5% by improving the working environment, the resulting annual savings will exceed the annual cost of building ownership and operation! This guide shows facility managers how to make these positive changes—saving energy, increasing productivity, and greatly reducing facility environmental impacts.

Cost of building per year .....	\$15/sq ft (\$161/m <sup>2</sup> )
Employee cost per year .....	\$315/sq ft (\$3,390/m <sup>2</sup> )
5% productivity improvement .....	\$16/sq ft (\$172/m <sup>2</sup> )

- The Federal facility manager community operates and maintains more than 500,000 buildings owned and leased by the Federal Government.
- The area of these buildings is in excess of 3 billion square feet (275 million m<sup>2</sup>) of floor space.
- These buildings are the homes, working places, and support systems for almost two million Federal workers and many contract staff. They comprise everything from office buildings to power plants and include aircraft hangers, libraries, hospitals, tourist attractions, and prisons.
- These Federal buildings consume in excess of 60 billion kilowatt-hours of energy each year, at a cost of more than \$3.5 billion.
- The water utilized by these buildings and other facilities is staggering in quantity—several hundred cubic miles each year!
- Facility managers purchase billions of dollars of materials annually for operations, maintenance, repair, and renovation. Their procurement decisions dramatically affect the types of products created and manufactured by a wide range of businesses—from paper products to steel panels, from cleaning fluids to hydraulic fluids, and from medicines to pesticides.

**The bottom line is this:** Federal facility managers probably manage more resources and have more impact on the environment than any other group in the world. Entire changes in direction relative to energy and environmental quality are possible through their collective action.

This guide is designed to provide facility managers with the information they need to make wise energy and environmental decisions that not only reduce energy consumption and protect the environment, but also save money and improve the productivity of Federal workers.

**What are the potential savings that facility managers can produce** to both reduce costs and U.S. dependence on foreign energy sources? The Electric Power Research Institute (EPRI) estimates that an aggressive drive to reduce energy costs can reduce electricity use by 24–44%. The Rocky Mountain Institute goes even further and claims potential cost-effective electricity savings of 75%!



## THE KEY PRINCIPLES

The key principles for facility managers to follow to reduce energy and environmental impacts of their operations are:

- **Minimize life-cycle costs** through resource management.
- **Reduce resource consumption:** energy, water, land, materials.
- **Reduce resource waste:** energy, water, materials.
- **Increase equipment and system efficiency:** no-cost or low-cost tune-ups, modifications, replacement.
- **Emphasize source and waste reduction** to all facility users.
- **Create healthy environments** for Federal workers by improving indoor air, light, noise, temperature, humidity.

## Contacts

Federal greening initiatives, including the online version of this guide and *The Greening of the White House*, are located on the Internet at [www.eren.doe.gov/femp/](http://www.eren.doe.gov/femp/).

The *Whole Building Design Guide* can be found at [www.wbdg.org](http://www.wbdg.org).

The FEMP Help Desk at (800) DOE-EREC (363-3732) offers technical support on a wide range of topics to assist facility managers in greening their facilities.